

=> d his full

(FILE 'HOME' ENTERED AT 09:22:36 ON 14 AUG 2003)

FILE 'MEDLINE' ENTERED AT 09:22:58 ON 14 AUG 2003

L1 5278 SEA PLU=ON (GAMMADELTA OR GAMMA DELTA) AND
(LYMPHOCYTE OR T
CELL)
L2 152 SEA PLU=ON L1 AND (STIMULAT? OR ACTIVAT?) AND
(TOPICAL? OR
SKIN OR DERMAL OR DERMIS OR EPIDERMAL OR EPIDERMIS)
L3 3 SEA PLU=ON L2 AND TOPICAL?
D BIB AB 1-3

(FILE 'HOME' ENTERED AT 10:17:22 ON 14 AUG 2003)

FILE 'MEDLINE' ENTERED AT 10:17:28 ON 14 AUG 2003

L1 9 SEA PLU=ON ADMINIST? AND GENERAL ROUTE
D BIB AB 1-9

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(FILE 'HOME' ENTERED AT 10:44:41 ON 14 AUG 2003)

FILE 'MEDLINE' ENTERED AT 10:44:50 ON 14 AUG 2003

L1 348203 SEA PLU=ON (GAMMADELTA OR GAMMA DELTA OR GAMMA
(3A) DELTA)
AND T CELL OR LYMPHOCYTE
L2 5549 SEA PLU=ON (GAMMADELTA OR GAMMA DELTA OR GAMMA
(3A) DELTA)
AND (T CELL OR LYMPHOCYTE)
L3 19 SEA PLU=ON L2 AND (REPTILE OR SNAKE OR FISH)
D BIB AB 15-19
L4 1 SEA PLU=ON GAMMA9DELTA2
L5 348203 SEA PLU=ON L1 OR GAMMA 9 DELTA 2
L6 348203 SEA PLU=ON L1 OR (GAMMA 9 DELTA 2)
L7 7 SEA PLU=ON L4 OR (GAMMA 9 DELTA 2)
D BIB AB 1-7

S #

Updt

Database

Query

Time

Comment

S7948
U
USPT

(general route).clm.

2003-08-14
10:18:09

S7947
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USPT

general route.clm.

2003-08-14
10:17:59

S7946
U
USPT

(5902793.pn. or 5639653.pn.) and (topical or skin or
derm\$ or epiderm\$)

2003-08-14
08:47:39

S7945
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USPT

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2003-08-14
08:26:39

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USPT

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2003-08-14
08:26:00

S7943
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USPT

(gammadelta or Gamma delta) same (t cell or lymphocyte)

2003-08-14
08:25:46

S7942
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USPT

T gammadelta or t Gamma delta

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08:24:50

S7941
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USPT

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2003-08-14
08:23:52

S7940

U

USPT

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2003-08-14
08:21:30

S7939

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USPT

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2003-08-14
08:06:53

S7938

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USPT

5639653.pn.
2003-08-14
08:05:42

S7937

U

USPT

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or "gamma9 delta2"
2003-08-12
15:17:48

S7936

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USPT

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2003-08-12
15:17:16

S7935

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USPT

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2003-08-12
15:15:23

S7934

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USPT

5639653.pn.

2003-08-12

15:07:59

S7933

U

USPT

5639693.pn.

2003-08-12

15:07:44

S7932

U

USPT,PGPB,JPAB,EPAB,DWPI,TDBD

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(phosphate or diphosphate or triphosphate)) same
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2003-08-12

15:07:01

S7931

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USPT,PGPB,JPAB,EPAB,DWPI,TDBD

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2003-08-12

15:06:49

S7930

U

USPT,PGPB,JPAB,EPAB,DWPI,TDBD

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2003-08-12

15:06:40

S7929

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USPT,PGPB,JPAB,EPAB,DWPI,TDBD

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diphosphate or triphosphate)

2003-08-12

15:06:31

S7928

U

USPT,PGPB,JPAB,EPAB,DWPI,TDBD

(phosphate or diphosphate or triphosphate) same epoxide

2003-08-12

15:06:27

S7927

U

USPT,PGPB,JPAB,EPAB,DWPI,TDBD

phosphate or diphosphate or triphosphate same epoxide

2003-08-12

15:06:08

S7926

U

USPT,PGPB,JPAB,EPAB,DWPI,TDBD

phosphoepoxide

2003-08-12

15:06:05

FULL TEXT OF CASES (USPQ FIRST SERIES)

In re Barr, Williams, and Whitmore, 170 USPQ 330 (CCPA 1971)

In re Barr, Williams, and Whitmore

(CCPA)

170 USPQ 330

Decided July 8, 1971

No. 8429

U.S. Court of Customs and Patent Appeals

Headnotes

PATENTS

1. Claims -- Indefinite -- In general (§ 20.551)

Claims must be construed from standpoint of person skilled in relevant art in determining whether they comply with 35 U.S.C. 112 by particularly pointing out and distinctly claiming subject matter which applicants regard as their invention.

2. Evidence -- Judicial notice (§ 36.20)

Court does not use scientific journals as basis for taking judicial notice that controverted phrases are art-recognized because court is not sure that this fact is indisputable among reasonable men; however, these extra-record references may be used to bolster a weak point which is supported by some evidence in record even though court would decline to use them by themselves as basis for taking of judicial notice if there were no evidence at all in record in support of the point.

3. Construction of specification and claims -- By specification and drawings -- In general (§ 22.251)

Construction of specification and claims -- Defining terms (§ 22.45)

Disclosure may serve as dictionary for terms in claims; in such instances, disclosure may be used by court in interpreting claims and in determining their scope.

Page 331

4. Claims -- Functional -- In general (§ 20.451)

In re Fuetterer, 138 USPQ 217, held that use of functional statements in claims to limit a class of chemical compounds used as one element of a composition of matter is sanctioned by third paragraph of 35 U.S.C. 112; although this case is not directly in point in instant situation because it dealt with a composition, not a compound, its rationale is controlling.

5. Patentability -- Composition of matter (§ 51.30)

All "compositions of matter" are "combinations" if they consist of two or more substances in some degree of corelationship.

6. Patentability -- Aggregation or combination -- In general (§ 51.151)

Patentability -- Composition of matter (§ 51.30)

Court declines to hold that combination is not patentable unless every element of combination could qualify as a patentable element, i.e., is statutory subject matter; categories of subject matter are set forth in 35 U.S.C. 101; chemical compounds are included as one kind of "composition of matter"; whether "elements" of chemical compounds are themselves statutory subject matter is irrelevant.

7. Claims -- Functional -- In general (§ 20.451)

Radical constituting element of claimed chemical compound is an element in claim for a combination within meaning of third paragraph of 35 U.S.C. 112.

8. Claims -- Negative expressions (§ 20.75)

Court reverses rejection of claims on ground that recital "incapable of forming a dye with said oxidized developing agent" is negative; claims comply with second paragraph of 35 U.S.C. 112 since boundaries of patent protection sought are set forth definitely, albeit negatively.

9. Claims -- Indefinite -- In general (§ 20.551)

Fact that claims encompass a large number of substances is no problem under second paragraph of 35 U.S.C. 112 so long as scope of claims is definite.

10. Claims -- Functional -- In general (§ 20.451)

Claims -- Negative expressions (§ 20.75)

Applicant may invoke third paragraph of 35 U.S.C. 112 to justify specification of one or more elements of claimed compound in functional terms; those functional terms may be negative; real issue is not whether recital is functional or negative, but whether it sets definite boundaries on patent protection sought, i.e., whether those skilled in relevant art can determine what claim does or does not read on.

11. Specification -- Sufficiency of disclosure (§ 62.7)

Disclosure of limited number of large group of chemicals is not necessarily sufficient basis for broad claims even though applicant makes general reference to group as a whole in specification.

12. Court of Customs and Patent Appeals -- Briefs (§ 28.05)

Specification -- Sufficiency of disclosure (§ 62.7)

While broad claims must necessarily read on many chemicals the operativeness of which applicant has not individually verified, and while it might have been reasonable for examiner or Board to have demanded specific proof from applicant that this or that class of compounds embraced by claims really could be used in disclosed manner, filing of solicitor's brief is too late a point in prosecution to inform applicant of what additional working examples are thought to be needed to support claims.

13. Specification -- Sufficiency of disclosure (§ 62.7)

Applicants have specifically disclosed how to make and use a large number of compounds and have asserted that other compounds, similar to compounds specifically disclosed in certain stated respects, may be made and used in same fashion; there is no reason to suspect that assertion is not accurate or that applicants are not pioneer inventors; useful purpose will not be served by extending lengthy application by inclusion of further working examples.

14. Construction of specification and claims -- Defining terms (§ 22.45)

Specification attempts no definition of claim language "a phenyl radical"; accord

Page 332

ingly, court must presume that phrase was used in its commonly accepted technical sense.

Particular patents--Photography

Barr, Williams, and Whitmore, Photographic Elements and Processes Utilizing Mercaptan-Forming Couplers, claims 23, 24, 26 to 30, and 32 to 35 of application allowed; claim 25 refused.

Case History and Disposition:

Appeal from Board of Appeals of the Patent Office.

Application for patent of Charles R. Barr, John Williams, and Keith E. Whitmore, Serial No. 507,975, filed June 14, 1965; Patent Office Group 120. From decision rejecting claims 23 to 30 and 32 to 35, applicants appeal. Affirmed as to claim 25; reversed as to claims 23, 24, 26 to 30, and 32 to 35; Almond, Judge, with whom Baldwin, Judge, joins, dissenting with opinion.

Attorneys:

James R. Frederick and Ogden H. Webster, both of Rochester, N. Y., for appellants.

S. Wm. Cochran (Raymond E. Martin of counsel) for Commissioner of Patents.

Judge:

Before Rich, Almond, Baldwin, and Lane, Associate Judges, and Durfee, Judge, United States Court of Claims, sitting by designation.

Opinion Text

Opinion By:

Rich, Judge.

This appeal is from the decision of the Patent Office Board of Appeals affirming the examiner's rejection of claims 23-30 and 32-35 in appellants' application entitled "Photographic Elements and Processes Utilizing Mercaptan-Forming Couplers," serial No. 507,975, filed June 14, 1965, a division of application serial No. 270,709, filed April 4, 1963, which matured into patent No. 3,227,554 on January 4, 1966. The appealed claims, all of which are for photographic color couplers, were "rejected as failing to define the invention properly, under 35 U.S.C. 112 * * *." Claim 36, for a single chemical compound, stands allowed. We affirm in part and reverse in part.

The Invention

A "coupler" in this context is "a compound in a color-photography emulsion or developer solution that combines with the oxidized developer to form a dye." Webster's Third New International Dictionary (1966). The particular couplers here involved are of the general formula COUP-S-R wherein COUP is a coupler radical, S is a monothio radical (i.e., a sulfur atom) substituted in the coupling position of the COUP radical, and R is an organic radical. The essence of the invention is the use of the monothio radical to link known coupler radicals to certain other known organic radicals, resulting in the formation of diffusible mercaptans of the formula R-SH and photographic dyes when the coupler is reacted with a suitable developing agent. These mercaptans inhibit the growth of dye particles, increasing the sharpness of the resulting photograph. Allowed claim 36 recites a single chemical compound; the twelve claims on appeal recite classes of compounds, and it is the manner in which they do so which has led to this appeal.

We set forth claim 23, the broadest on appeal, as illustrative (subparagraphing supplied):

23. A photographic color coupler capable of forming a dye and a mercaptan when reacted with oxidized aromatic primary amino color developing agent and having the formula COUP-S-R wherein

COUP is a photographic color coupler radical selected from the group consisting of a 5-pyrazolone coupler radical and an open-chain ketomethylene coupler radical,

COUP having substituted in its coupling position the monothio radical; and

R is an organic radical incapable of forming a dye with said oxidized developing agent and being selected from the group consisting of an alkyl radical, a cycloalkane radical, an aryl radical and a heterocyclic radical containing at least one hetero atom selected from the group consisting of oxygen, sulfur and nitrogen.

The Rejection

No prior art is relied on.

The gist of the principal rejection, as expressed by the examiner, is that the claims "appear to read on vast numbers of compounds, whose only common feature is a thioether linkage." This fact, he wrote, renders the claims "so broad as to be virtually meaningless," thereby failing "to point out what applicants regard as their invention with the specificity required by 35 U.S.C. 112." Specifically, he said the terms "a 5-pyrazolone coupler radical" and "an open-chain ketomethylene coupler radical" (one or the other or both of which are used in every claim on appeal) render the claims "indefinite" because they read on "any substituted derivative" whereas "Only a relatively small, unrepresentative number of particular radicals falling within such terminology is supported by the specification." Similarly, the examiner stated that the terms "aryl," "al

Page 333

kyl," and "heterocyclyl" (heterocyclic?) did not "meet the requirements of 35 U.S.C. 112," apparently on the ground that the use of such broad terms was not supported by the specification since he cited *In re Sus*, 49 CCPA 1301, 306 F.2d 494, 134 USPQ 301 (1962).

Additionally, the examiner held that the phrase "incapable of forming a dye with said oxidized developing agent" is "unduly functional at a point of novelty," that the terms "coupling position," "5-pyrazolone coupler radical," and "open-chain ketomethylene" were impermissibly "indefinite," and that "Appellants' use of 'a phenyl' in claims 24, 25 and 30 involves a distortion of the term" because the specific radical recited in claim 25, which depends from claim 24, is not in fact a phenyl radical as that term is commonly understood.

The Board of Appeals affirmed all the examiner's rejections. Concerning whether use in the claims of the broad terms "5-pyrazolone coupler radical" and "open-chain ketomethylene coupler radical" was supported by the specification, the board noted that appellants had disclosed thirty-seven specific examples of the former and forty specific examples of the latter but concluded that the specific examples given were not "sufficiently representative" of the "so-called classes * * * delineated by the claims * * *." The recitation of the R group it found similarly impermissible because it is "even broader" than the terminology used to delimit the photographic color coupler radicals.

Concerning the secondary rejections, the board held that "claims 23, 24, 26, 30, 31 and 32 do not identify the coupling position and this alone would render these claims indefinite and too broad," and the phrase "incapable of forming a dye with said oxidized developing agent" it found objectionable both for being "functional" and for being "negative." While it did not comment specifically on the examiner's other grounds of rejection, it did state that it found "no reversible error" in the examiner's rejection of all claims on the ground that the limitations placed by the claims on the COUP and R moieties were "so broad and indefinite that no definite or determinable group of compounds is set forth" and of claim 25 on the ground that it "amount[s] to a distortion of the term 'phenyl radical' * * *."

Opinion

This opinion is in five sections, the first three dealing with the general rejections for indefiniteness under the second paragraph of 35 U.S.C. 112, the fourth dealing with the rejections under the first paragraph of 35 U.S.C. 112, and the last dealing with the specific rejection of claim 25 under the second paragraph of 35 U.S.C. 112.

I. Are the terms "5-pyrazolone coupler radical" and "open-chain ketomethylene coupler radical" indefinite?

[1]To rephrase the question in terms of the statute, does the use in the claims of the terms "5-pyrazolone coupler radical" and "open-chain ketomethylene coupler radical" cause the claims to fail in particularly pointing out and distinctly claiming the subject matter which appellants regard as their invention? To answer this question, the claims must be construed from the standpoint of a person skilled in the relevant art. In this regard we note (1) that each of the appealed claims is expressly directed to "photographic color couplers," (2) that the first paragraph of the specification states that "This invention relates to photography, and more particularly, to photographic elements and processes utilizing a new class of photographic color couplers," (3) that each object of the invention recited in the specification concerns the photographic art, and (4) that the only utility of the invention asserted in the specification and shown in the examples is in the photographic art. From all this we conclude that the specification, including the claims with which it concludes, is directed to those skilled in the photographic art and must be construed from the standpoint of a person skilled therein.

Appellants rely heavily on the fact that United States patents, including the patent which matured from the parent of this application, have issued containing the terminology now controverted. This they cite as evidence that "Patent Office Examiners skilled in photographic chemistry recognize that '5-pyrazolone' and 'open-chain ketomethylene' constitute a distinct, identifiable group of color coupler radicals." ²While we agree with the solicitor that these patents are not weighty

Page 334

evidence of art recognition of the controverted terms "in the absence of proof, or even an allegation, that the patented files show that the 'art-recognized group' issue was raised therein, and resolved in appellants' favor," ³we note that neither the examiner nor the board gave any reason (for instance, the simple statement that they had never seen the terms used before and would like to see examples of their use in literature in the art) for their distrust of appellants' terminology.

Thus we are faced with appellants' fervent protestation that "Open-chain ketomethylene and 5-pyrazolone photographic color coupler radicals constitute distinct, identifiable groups of radicals recognized by those skilled in the photographic art," as evidence of which they have cited the use of those terms in the claims of two presumptively valid U. S. patents, ⁴on the one hand, and the solicitor's equally fervent, but unsupported, protestation that "The [appellants'] contention regarding art recognized classes lacks merit" on the other. The solicitor has not directed our attention to any evidence in the record or any indication in generally accepted references in the art that a competent photographic chemist could not ascertain whether any given chemical did or did not contain either a 5-pyrazolone coupler radical or an open-chain ketomethylene coupler radical and therefore whether the appealed claims did or did not read on the given chemical to that extent, and what we find in what we take to be generally accepted references is to the contrary. We note, for instance, that in Vittum and Weissberger, *The Chemistry of Dye-Forming Development*, 2 *Journal of Photographic Science* 81 (1954), cited by appellants, the authors divide "nearly all" of the "diverse compounds" known to be useful as couplers into three groups: (a) open-chain methylene compounds, (b) cyclic methylene compounds, and (c) methine compounds. While Vittum and Weissberger do not specifically mention open-chain *keto* methylene couplers, we think it indisputable that, if photographic chemists would recognize open-chain methylene couplers in general, they would recognize open-chain ketomethylene couplers in particular. Similarly, while Vittum and Weissberger state only that "The most valuable couplers of this group [i.e., the cyclic methylene compounds] are the pyrazolones which are widely used as magenta couplers," we note that Kirk-Othmer, *Encyclopedia of Chemical Technology* (2d ed. 1968), Vol. 16 at 772, defines the 5-pyrazolone structure, and Vol. 5 at 824, in the article entitled "Color Photography," states that "The most important class of couplers for magenta dye formation are the derivatives of 5-pyrazolones," indicating that 5-pyrazolone color couplers are well known to the photographic art. ⁵

In his brief on appeal, the solicitor argued the weakness of the appellants' proof and emphasized the breadth of appellants' claims. ⁶While we have already noted that appellants' case might well have been much stronger (if, for instance, the affidavit which appears in the printed transcript but which is not a part of the official record because of the lateness of its submission had been submitted earlier), under the circumstances appellants have persuaded us that their claims are just as definite as a claim for "all compounds containing sulfur," a claim which might not be in compliance with the first paragraph of 35 U.S.C. 112, depending upon the disclosure contained in the specification, and which would certainly be too broad in the sense of 35 U.S.C. 103, but which would be fully in compliance with the second paragraph of section 112, assuming the applicant regarded his invention to consist of "all compounds containing sulfur." Accordingly, we cannot affirm the board's rejection on this ground.

II. Does the use of the term "coupling position" in the claims make them indefinite?

Independent claims 23, 24, 26, 30, and 32 recite the COUP radical, then recite the substitution of the monothio radical S in "its

Page 335

coupling position," and the other claims on appeal incorporate the "coupling position" recitation by operation of law. 35 U.S.C. 112, second paragraph, second sentence. According to the specification, it is "well known to those skilled in the photographic art" what "the coupling position" of COUP radicals of the type recited is. Specifically,

The 5-pyrazolone coupler radicals couple at the carbon atom in the 4-position, * * * and the open-chain ketomethylene coupler radicals couple at the carbon atom forming the methylene moiety (e.g.,

Graphic material consisting of a chemical formula or diagram set at this point is not available. See text in hard copy or call BNA PLUS at 1-800-452-7773 or 202-452-4323.

, *denoting the coupling position).

The examiner in his Answer, however, seems to have questioned the accuracy of the above assertion, stating that

* * * most "5-pyrazolone" radicals and "open-chain ketomethylene" radicals have more than one "coupling position," and these are not necessarily in the positions designated * * *

and citing 4-4-dimethyl-3-(2-hydroxyphenyl)-5-pyrazolone as a compound which "might be `a 5-pyrazolone coupler radical' with the coupling position being the *5-position in the phenyl ring*." (Emphasis in the original.) In affirming, the board stated that the failure of the claims to "identify the coupling position" was by itself sufficient to render them "indefinite and too broad." The claims would clearly be definite if, despite the lack of specific recitation of *the* coupling position in the claim, the recitation of "the coupling position" of a 5-pyrazolone coupler radical and of an open-chain ketomethylene coupler radical would be understood by those skilled in the photographic art to refer to the single, definite positions set forth in appellants' specification. This being so, we take it that the board must have (1) accepted the examiner's contention that there are a *plurality* of "coupling positions" on the recited COUP radicals, (2) read the claims as referring to a single, unspecified one of those "coupling positions," and (3) found that appellants had failed to "particularly point out" in their claims *at which* of the plurality of possible coupling positions the monothio radical was substituted in the particular photographic color couplers, thereby failing to point out what they regard as their invention.

[3]While we are mindful of our declaration in *In re Prater*, 56 CCPA 1381, 415 F.2d 1393, 162 USPQ 541 (1969), that this court, in contrast to a court adjudicating an infringement suit on an issued patent, will give "claims yet unpatented * * * the broadest reasonable interpretation consistent with the specification," *id.* at 1396, 415 F.2d at 1404, 162 USPQ at 550, it is also settled patent law that the disclosure may serve as a dictionary for terms appearing in the claims and that in such instances the disclosure may be used, even by this court, in interpreting the claims and in determining their scope. *In re Vogel*, 57 CCPA 920, 924, 422 F.2d 438, 441, 164 USPQ 619, 622 (1970). In our view, this is such a case, for the specificity with which appellants have set forth what they mean by the controverted phrases is the practical equivalent of a section in their specification headed "Lexicography." Even if it is true that "most `5-pyrazolone' radicals and `open-chain ketomethylene' radicals have more than one `coupling position'" in the general sense of that phrase, the portion of the specification quoted at the beginning of this section defines with great particularity precisely what *appellants* meant by the phrase. So interpreted, their claims do particularly point out and distinctly claim, so far as this issue is concerned, the subject matter which the appellants regard as their invention and therefore comply with the second paragraph of section 112.

III. Does the use of the phrase "incapable of forming a dye with said oxidized developing agent" in the claims make them indefinite?

The board affirmed the examiner's rejection of all claims on the ground that the limitation "incapable of forming a dye with said oxidized developing agent" placed on the organic radical R is "negative and functional." On appeal, appellants argue that, since the claimed compounds are composed of known classes of radicals, these radicals can be specified in terms of their function without recitation of structure within the meaning of the third paragraph of 35 U.S.C. 112. ²The solicitor, on the other hand, has argued that

* * * paragraph 3 [of 35 U.S.C. 112] is applicable to a plural step process, a mechanical combination of elements, a plurality of compounds taken in combination (a composition), but not [to] a compound.

The gist of the solicitor's argument, as we understand it, is that the third paragraph of

Page 336

section 112 refers only to combinations each element of which is itself patentable subject matter (i.e., which could be separately patented, subject to the conditions and requirements of Title 35) and that radicals are not patentable subject matter.

At the outset we note that it has not been argued that "functional" language in a claim is prohibited except as authorized by the permissive third paragraph of section 112. Indeed, the solicitor ends the portion of his brief on this point with the caveat that his arguments are

* * * not to say that functional language could not be used in a claim to characterize any such "element" [i.e., "an 'element' such as a chemical compound or a single integral [sic] mechanical component or element, such as a nail"] provided the claim otherwise satisfies the requirements of Section 112, paragraph 2.

However, appellants have expressly sought, and have been denied, "the benefit of the third paragraph of 35 U.S.C. 112," presenting for our determination an interesting extension of the issue before us in *In re Fuetterer*, 50 CCPA 1453, 319 F.2d 259, 138 USPQ 217 (1963).

[4]In the *Fuetterer* case we decided that the use of functional statements in claims to limit a class of chemical compounds (salts) used as one element of a composition of matter "is specifically sanctioned by the third paragraph of 35 U.S.C. 112." ⁸As the solicitor points out, the case is not directly in point because it "dealt with a composition, not a compound." Nevertheless, we feel that its rationale, if not its holding, is controlling here. There the solicitor argued that "the last paragraph of 35 U.S.C. 112 is by its very language limited to claimed combinations involving mechanical structures or apparatus and methods," but we disagreed, noting our agreement with the statement in Federico's Commentary on the New Patent Act, 35 U.S.C.A. Vol. 1, p. 25 (1954), that the word "combination" in this paragraph *includes* "not only a combination of mechanical elements, but also a combination of substances in a composition claim, or steps in a process claim." Here the solicitor has expanded his argument just enough to concede the narrow holding of *Fuetterer*, and once again we are not persuaded that the clear words of the statute should be given so illiberal an interpretation.

[5]Speaking broadly but giving each of the disputed words their normal meaning, all "compositions of matter" are "combinations" if they consist of two or more substances in some degree of corelationship. The inorganic salts in Fuetterer were substances which occupied space and had mass, so they were matter, and they coated with rubber, vulcanizing agent, reinforcing agent, protein, and/or carbohydrate to produce a desired result (improving the wet traction of tires), so the salts were held to constitute one element of a "combination" as that word is used in the third paragraph of section 112. Here, the controverted radicals are matter, for they too occupy space and have mass, and even more clearly than in Fuetterer they coat with the other two radicals recited to produce a desired result--namely, "A photographic color coupler capable of forming a dye and a mercaptan when reacted with oxidized aromatic primary amino color developing agent."

[6]The solicitor has argued that a combination is not patentable unless every element of the combination "could qualify as a patentable element" (i.e., is statutory subject matter). He has cited no authority for this proposition, and we decline to adopt it. In our view, the categories of statutory subject matter are set forth in 35 U.S.C. 101; chemical compounds are clearly included as one kind of "composition of matter"; and whether the "elements" of chemical compounds are themselves statutory subject matter we deem irrelevant to the question on appeal.

[7]Accordingly, we hold that a radical constituting an element of a claimed chemical compound is an "element in a claim for a combination" within the meaning of 35 U.S.C. 112, third paragraph.

Page 337

[8]There remains for consideration the board's rejection of all claims on the ground that the recital "incapable of forming a dye with said oxidized developing agent" is "negative." ²However, we feel that this rejection needs little comment in view of our decision in *In re Wakefield*, 57 CCPA 959, 422 F.2d 897, 164 USPO 636 (1970), where we rejected a similar contention. *Id.* at 967, 422 F.2d at 904, 164 USPO at 641. Again, the

[9]real "complaint seems to be that a very large number of substances are encompassed by the claims," and again we see no problem with that under the second paragraph of section 112, so long as the scope of the claim is definite. Here again the boundaries of the patent protection sought are set forth definitely, albeit negatively, and here again we hold that the challenged claim complies with the second paragraph of 112 in this respect.

[10]In summary, we hold that an applicant may invoke the third paragraph of section 112 to justify the specification of one or more elements of a claimed compound in "functional" terms, ¹⁰and that those "functional" terms may be "negative." The real issue in any such case is not whether the recital is "functional" or "negative," but whether the recital sets definite boundaries on the patent protection sought--that is, whether those skilled in the relevant art can determine what the claim does or does not read on. Judged by this standard, we think it clear that the controverted language complies with the second paragraph of section 112.

IV. Is the claim terminology supported by the specification?

All claims have been rejected on the ground that the terms "5-pyrazolone coupler radical" and "open-chain ketomethylene coupler radical" and the various phrases used in specifying the R radical ¹¹ are insufficiently supported in the specification--or, in the words of the statute, on the ground that the specification does not contain a written description of the manner of making and using the invention in such terms as to enable any person skilled in the photographic art to make and use the same. However, since it is not questioned that the specification teaches how to make and use at least certain embodiments of the invention, the question is really whether the applicants have enabled as broadly as they have claimed.

Appellants stress that

* * * working examples [contained in their specification] describe the preparation and use of molecules which contain 25 different 5-pyrazolone photographic color coupler radicals and 30 different openchain ketomethylene photographic color coupler radicals * * *

and that their

* * * disclosure of specific useful "R" radicals includes 13 alkyl radicals, 1 cycloalkane radical, 8 aryl radicals, 122 heterocyclic radicals containing at least 1 nitrogen atom, 9 heterocyclic radicals containing at least 1 oxygen atom, and 17 heterocyclic radicals containing at least 1 sulfur atom.

The Board of Appeals recognized that appellants had disclosed a considerable number of examples of the various radicals in their specification, either directly by way of working examples or indirectly by way of incorporation by reference, but it nevertheless affirmed the examiner's rejection on this ground, noting that "the application of the fundamental

[11]principle * * * ["that disclosure of a limited number of a large group of chemicals is not necessarily sufficient basis for broad claims even though appellant has made general reference to the group as a whole in his specification"] `is necessarily a matter of judgment based on the circumstances of each case'." ¹²While we agree with the quoted statement, we in turn note that our work would be immensely facilitated if the board (and the examiner, before a case reaches the board) would state the circum

Page 338

stances of the case which have led it to judge that the limited number of chemicals specifically disclosed is not fairly representative of the large number of chemicals claimed. Specifically, if the board thought that appellants' working examples were deficient in some particular area or subclass embraced by the claim, there is no hint of that in its opinion.

The solicitor has attempted to remedy this deficiency in the record by setting forth at great length in his brief the multitudes of specific chemicals covered by appellants' claims which are *not* included among their working examples. ¹³However, the solicitor has not suggested that there is any evidence in the record that any significant number of these multitudes of specific chemicals would not be "photographic color couplers capable of forming a dye and a mercaptan when reacted with oxidized aromatic primary amino color developing agent," nor has he argued that any significant group of compounds embraced by the claims are so obviously inoperative that we can take judicial notice of the fact.

[12]While we appreciate that claims as broad as appellants' must necessarily read on many chemicals the operativeness of which the applicant has not individually verified, and while it might well have been reasonable in this case for the examiner or the board to have demanded specific proof from the appellants that this or that class of compounds embraced by the claims really could be used in the disclosed manner, we think the filing of the solicitor's brief is far too late a point in prosecution to inform an applicant of what additional working examples are thought to be needed to support his claims.

In any event, as this court recently stated,

* * * there is no magical relation between the number of representative examples and the breadth of the claims; the number and variety of examples are irrelevant if the disclosure is "enabling" and sets forth the "best mode contemplated." ¹⁴[In re Borkowski, 57 CCPA 946, 952, 422 F.2d 904, 910, 164 USPQ 642, 646 (1970).]

[13]Appellants have specifically disclosed how to make and use a large number of compounds and have asserted that other compounds, similar to the compounds specifically disclosed in certain stated respects, may be made and used in the same fashion. We see no reason, on the state of this record, to suspect that their assertion is not accurate or that appellants are not the pioneer inventors they claim to be. Appellants' application runs to 132 pages in the transcript of record, and we are not persuaded that any useful purpose would have been served by extending it with further working examples. See In re Kamal, 55 CCPA 1409, 1413-14, 398 F.2d 867, 871, 158 USPQ 320, 323 (1968).

The rejection of all claims as unsupported by the specification is accordingly reversed.

V. Does claim 25 fail to particularly point out and distinctly claim subject matter which appellants regard as their invention?

Claim 24 recites that R in the formula COUP-S-R "is a phenyl radical incapable of forming a dye with said oxidized developing agent." Claim 25 reads:

25. A photographic color coupler as described in claim 24 wherein the phenyl radical is a 3-octadecylcarbamyphenyl radical.

The examiner appears to have rejected claims 24, 25, and 30 (which is equivalent to claim 24 in this respect) on the ground that

Appellants' use of "a phenyl" in claims 24, 25 and 30 involves a distortion of the term. The "phenyl radical" means the radical derived from benzene by removing one hydrogen atom, and cannot include as appellant is [sic] using it, a radical derived from N-octadecylbenzamide (See claim 25). Compare In re Hill, [34 CCPA 1062, 161 F.2d 367] 73 USPQ 482 [1947].

The board affirmed only the rejection of claim 25 on this ground.

In re Hill, cited in the above quotation, held that a definition in the specification of a term used in a claim which distorts the common meaning of the term is not permissible and renders the claim in which the term appears indefinite. This court there affirmed a rejection because the term "carbamide" was said by the Patent Office to mean the *single* substance urea whereas the claim used the phrase "a carbamide formaldehyde resin" to mean one of a *plurality* of resins formed from formaldehyde and urea derivatives and substituted ureas as well as urea itself. The court

Page 339

found appellant had not established that such a meaning was proper.

[14]The specification in this case attempts no definition of the claim language "a phenyl radical." Accordingly, we must presume that the phrase was used in its commonly accepted technical sense. Appellants apparently concede as much, arguing that their "use of 'phenyl' in claim 25 is similar to referring to 'hydroxyphenyl'," which they assert is "standard practice" citing Hackh's Chemical Dictionary (3d ed. 1944). However, they have not referred us to any standard work on chemistry which indicates that the commonly accepted technical meaning of the words "a phenyl radical," without more, would encompass the hydroxyphenyl radical, or any other radical the name of which includes the word "phenyl." On the contrary, Hackh's quite plainly defines "phenyl" as " *The* monovalent radical, $C_6H_5\cdot$, derived from benzene, C_6H_6 , or phenol, C_6H_5OH ." (Emphasis supplied.)

On the present record, therefore, we are faced with a claim for compounds containing a radical said simultaneously to be "a phenyl radical" and "a 3-octadecylcarbamyphenyl radical" and with the assertion of the Patent Office that the meaning of the phrase "a phenyl radical" is "confined to a single, definite radical" (to paraphrase the Hill case) not the 3-octadecylcarbamyphenyl radical, and we have been given no reason to doubt the Patent Office assertion. We therefore hold claim 25 indefinite and accordingly *affirm* its rejection under the second paragraph of 35 U.S.C. 112.

In summary, we *affirm* the rejection of claim 25 and *reverse* the rejection of claims 23, 24, 26-30, and 32-35.

Footnotes

Footnote 1.

Claim 30 is equivalent to claim 24 in this respect.

Footnote 2. The present application was apparently assigned to a section of the Patent Office other than that to which the applications from which the patents relied upon were assigned, and both a letter of appellants to the examiner and appellants' brief before the Board of Appeals contain plaintive requests that the reader "consult any one of the expert photographic examiners in the photographic examining group" if he doubted appellants' assertion that 5-pyrazolone coupler radicals and openchain ketomethylene coupler radicals "are notoriously well known in the art."

Footnote 3. Moreover, both such patents which were properly in the record before the Patent Office and which are in the record before us were issued to appellants here and assigned to the real party in interest here, which suggests that the terms may be "art-recognized" only in appellants' own laboratory.

Footnote 4. U. S. Patent No. 3,227,551, and U. S. Patent No. 3,227,554, both issued Jan. 4, 1966, and assigned to Eastman Kodak Company.

Footnote 5. [2] 5 We do not use the above references as a basis for the taking of judicial notice that the controverted phrases are art-recognized (which would eliminate the need for our reliance on the two patents of record) because we are not sure that this fact is indisputable among reasonable men. McCormick on Evidence, § 324, p. 689 (1954). However, we are of the view that these extra-record references may be used to bolster a weak point which is supported by *some* evidence in the record even though we would decline to use them by themselves as a basis for the taking of judicial notice if there were *no* evidence at all in the record in support of the point. Cf. *In re Boon*, 58 CCPA ___, 439 F.2d 724, 727-28, 169 USPQ 231, 234 (1971).

Footnote 6. This latter argument we regard as beside the point, for there is no indication in the record that the appellants regard their invention as encompassing anything less than the broad field claimed.

Footnote 7.

35 U.S.C. 112, third paragraph, reads:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof.

Footnote 8. Only two judges joined the opinion of the court in *Fuetterer*. Two judges dissented, and one judge concurred "in result only," without opinion. However, the opinion of the dissenting judges argues that *Fuetterer's specification* failed to teach "which salts, other than the four disclosed, are capable of performing the desired function"; it does not suggest that functional expressions are per se inadequate to particularly point out and distinctly claim classes of compounds used as elements of compositions. Furthermore, both judges who dissented in *Fuetterer* joined the unanimous opinion in *In re Boller*, 51 CCPA 1484, 332 F.2d 382, 141 USPQ 740 (1964), a case in which the same panel of judges hearing *Fuetterer* reaffirmed the propriety of using functional language to describe one element in claims for a composition of resin, neutralizing agent, and water. *Id.* at 1488, 332 F.2d at 386, 141 USPQ at 742.

See also *Locklin v. Switzer Bros., Inc.*, 299 F.2d 160, 165-66, 131 USPQ 294, 298-99 (9th Cir. 1961) (approving a product-by-process claim in which the amount of one reactant was described as "an amount * * * sufficient to render said condensation product substantially insoluble in aromatic hydrocarbon solvents but insufficient to render it thermosetting."), cert. denied, 369 U.S. 861, 133 USPQ 703 (1962).

Footnote 9. This rejection was contained in the first office action, but, after appellants responded that rejection on this ground "does not appear to be pertinent in view of the Commissioner's notice published May 10, 1965, 145 USPQ 6, page II," the examiner did not raise it again. Thus, it appears to have been a new ground of rejection when the board resurrected it in its opinion.

Footnote 10. At least where, as here, the functional language modifies known classes of radicals.

Footnote 11. Claim 23: "selected from the group consisting of an alkyl radical, a cycloalkane radical, an aryl radical and a heterocyclic radical containing at least one hetero atom selected from the group consisting of oxygen, sulfur and nitrogen."

Claims 24 and 30: "a phenyl radical."

Claim 25: "a 3-octadecylcarbamyphenyl radical."

Claims 26 and 32: "a heterocyclic radical having 1 to 4 hetero-nitrogen atoms."

Claims 27 and 34: "a 2-benzothiazolyl radical."

Claims 28 and 35: "a 5-phenyl-1,3,4-oxadiazolyl radical."

Claims 29 and 33: "a 1-phenyl-5-tetrazolyl radical."

Footnote 12. The bracketed quotation is from *In re Oppenauer*, 31 CCPA 1248, 143 F.2d 974, 62 USPQ 297 (1944); the terminal quotation is from *Ex parte Heckert*, 121 USPQ 587 (POBA 1958).

Footnote 13. For instance, we are informed that "not counting stereoisomers," the 20-carbon alkyl radical has 366,319 isomers, not all of which (or, to be fair, not a "representative sampling" of which) are included in appellants' working examples and that, "Among the more obvious radicals" which "could be substituted for hydrogen at the 1-position" of the 5-pyrazolone nucleus, but which are not included in any of appellants' working examples, are "amino, hydroxy, ester, carboxyl, sulfonyl per se, cycloalkyl, olefinic, actetylenic, heterocyclics, diazo, heavy metal-containing, etc." (Footnote omitted.)

Footnote 14. No question has been raised in this case concerning satisfaction of the "best mode" requirement.

Dissenting Opinion Text

Dissent By:

Almond, Judge, dissenting, with whom Baldwin, Judge, joins.

I respectfully disagree with the conclusion reached by the majority in part I of its opinion. Unlike the majority, I would affirm the rejection of all claims under 35 U.S.C. 112, second paragraph. In my opinion appellants have not overcome the contention of the Patent Office that the terms "5-pyrazolone coupler radical" and "open-chain ketomethylene coupler radical" are indefinite. Since I also find myself in disagreement with some of what is said in parts II-V of the majority opinion, I would affirm the decision of the board on this ground alone and not reach the issues discussed by the majority in parts II-V.

As pointed out in the majority opinion, we have here a situation where the Patent Office contends that certain chemical terms are indefinite and appellants contend they are not. Based on two United States Patents, cited by appellants for their use of the terms in question, and on two chemical texts which are not of record, the majority finds that the terms have a definite meaning to one of ordinary skill in the photographic art. In my opinion there is no real evidence of record to support this conclusion.

In regard to the two cited U. S. patents, I agree with the majority that "these patents are not weighty evidence of the art recognition of the controverted terms," since (1) there is no showing that the question of art recognition of the terms ever came up during the prosecution of these patent applications, and (2) both patents are assigned to the same assignee as the present application and were copending with the present application, which negates any presumption from the use of the terms in these patents that the terms are known to the art as a whole.

Since these two patents are not convincing of the art recognition of the controverted terms, there is no persuasive evidence before the court of the art recognition of those terms. The chemical texts cited in the majority opinion cannot aid appellants in this case. These texts are not of record and the majority has quite properly refused to take judicial notice of them. By considering the texts anyway, the majority has clearly gone beyond that which is authorized by 35 U.S.C. 144, which requires that this court "hear and determine * * * appeal[s] on the evidence produced before the Patent Office."

I think from the foregoing analysis that it is apparent that there remains the situation where one side argues that the terms are indefinite, the other side argues that they are not, and there is no persuasive evidence either way. Under the circumstances, I would place the burden on appellants to show that the terms in question have a definite art-recognized meaning. When an examiner rejects claims for indefiniteness under § 112 in situations such as this, it seems to me he is really saying what the majority evidently would like to have seen more explicitly spelled out, i.e., that he thinks the use of the terms makes the claims indefinite and would like to see examples of their use in literature in the art. An examiner can do little more since it is nearly impossible as a practical matter to show that the terms are indefinite. That is, an examiner cannot cite patents, textbooks, dictionaries, etc. to show that the terms are indefinite since the mere absence of the terms from the reference materials means little and if the terms are present in the reference materials, it would indicate some art recognition unless, perchance, the terms are listed with the nota

Page 340

tion that they have no definite art-recognized meaning. On the other hand, the fact that the terms have a definite art-recognized meaning is much more easily shown. For example, literature references which use the terms can be cited, dictionary and encyclopedia definitions (such as those cited in the majority opinion) can be brought forth, and affidavits (such as the one tendered by appellants but not entered of record) can be submitted.

Therefore, when challenged as to the definiteness of the terms "5-pyrazolone coupler radical" and "open-chain ketomethylene coupler radical," I think it was incumbent upon appellants to show that the terms do have an art-recognized meaning. This they have clearly failed to do. As noted previously, the only evidence of record tending to show the art recognition of the terms is found in the two U. S. patents which were cited by appellants, and the relevancy of these patents has been questioned by everyone including the majority. Since there is no other evidence of record to support appellants' position, I do not think it proper for the court to do for appellants (by finding reference to the terms in chemical texts) that which they should have done for themselves. To do so requires reliance on material which is clearly outside of the record in this case and which is not subject to being judicially noticed. This is not permissible under 35 U.S.C. 144.

For the foregoing reasons, I would affirm the decision of the board.

- End of Case -

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